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ABSTRACT

Presented to provide an idea of the best ERIC documents available on individualized learning, this paper contains a collection of over 100 reports and papers that were put into ERIC in the last two or three years. The listings have been categorized topically, and each entry is provided with an ED number and ordering and price information. The first section contains selected bibliographies, including references to books, papers, pamphlets, articles and excerpts, and theses. A number of organizational, philosophical, and operational considerations are discussed in the papers in the second section. The third section offers research, assessment, and experimental findings; papers in the fourth section provide a somewhat broader look at the relation of media to the individualization process. Selected systems approaches to individualized learning, such as Project PLAN and Individually Prescribed Instruction, are presented separately in the fifth section, and entries dealing with selected institutional approaches comprise the sixth section. References which describe diagnostic and prescriptive individualization techniques for the handicapped and non-performer conclude the paper. (Author/SH)

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Individualized Learning

by Robert A. Weisgerber

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A Series Three Collection from ERIC at Stanford

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INDIVIDUALIZED LEARNING

A Series Three Collection

From ERIC at Stanford

Robert A. Weisgerber

American Institutes for Research

Palo Alto, California

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FOREWORD

Series III Collections are offered to demonstrate the variety of media and technology documents available from ERIC and to make ordering copies a simple process. Most of the listed documents are available in microfiche and hard-copy.

This Series Three booklet is presented to give you an idea of the best ERIC documents available on individualized learning. Documents have been selected from the whole ERIC collection, and not just from those processed at the Stanford Clearinghouse on Media and Technology.

A new non-ERIC sources may be cited, but only recent or exceptionally useful ones which are well-known.

A computerized search of the information file in the ERIC system revealed hundreds of reports and papers concerned with one or more aspects of individualized learning. To facilitate a reader's identification of documents most relevant to his interests, the listings have been categorized topically. It should be noted that the listings are in descending order relative to the ED accession number. Thus, the higher the number, the more likely that the publication is recent. Most of these documents have been entered into the ERIC file during the last two or three years.

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I. SELECTED BIBLIOGRAPHIES

The various bibliographies include references to books, papers, and pamphlets; articles and excerpts; and theses.

A Survey of Individualized Reading and Mathematics Programs

Florence T. Pieronek. Alberta: Calgary Separate School Board, 1969. 66 pages. EDRS price microfiche 65c, hard-copy $3.29 (ED 047 894).

Individualized reading and mathematics programs in the United States and Canada were surveyed as a means of providing a report of successful programs for use by the Calgary, Alberta, schools. The report contains definitions of terms related to individualized programs, statements of rationale for individualized reading and mathematics programs, guidelines for individualizing instruction, and descriptions of existing programs. Aspects of individualized programs are described, and approaches for use in such programs are recommended. Individualized instruction is strongly recommended, and a comprehensive plan is proposed through which transition might be smoothly made from the present basal system to individualized instruction. A list of schools and centers visited and an extensive bibliography are included.

Individualized Instruction. Bibliographies in Education, No. 13

Ottawa, Ontario: Canadian Teachers' Federation, November 1970. 49 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 046 881).

This bibliography on individualized instruction lists 244 books, papers, and pamphlets; 333 articles and excerpts from books; and 13 theses. The period covered is approximately five years. Sources consulted included the Canadian Education Index (CCRE), the Education Index (Wilson's), the Current Index to Journals in Education (CCM), the Cumulative Book Index (Wilson's), Research in Education (ERIC), Education Studies in Canadian Universities (CEA), Directory of Education Studies in Canada (CEA), and Research Studies in Education (Phi Delta Kappa). For documents in the ERIC system, ED numbers and availability are indicated.

Individualized Reading, An Annotated Bibliography

Harry W. Sartain. Newark, Delaware: International Reading Association, 1970. 19 pages (50c to members, 75c to nonmembers). Document not available from EDRS.

At the present time more than 600 publications concerned with individualized reading are available. The 84 items listed in this bibliography were selected to help the reader obtain varied points of view without reading 600 articles. The selected studies are arranged in four categories to include (1) carefully considered arguments for and against individualized reading, (2) research studies and summaries, (3) suggestions on instructional materials to be used, and (4) descriptions of programs which are fully individualized as well as those which incorporate individualized reading as one phase of the work. The entries appear according to the author's last name in the four categories and are followed by an annotation which summarizes the study's conclusions in many cases.

A Guide to the Literature on Interactive Use of Computers for Instruction

(2nd Ed.) Karl L. Zinn and Susan McClintock. Stanford, California: Stanford University; ERIC Clearinghouse on Educational Media and Technology, January 1970. 31 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 202).

A comprehensive review of the use of computers in education. Includes a section on surveys, reviews and periodicals as well as meetings, organizations, and persons involved in the field. A bibliography with 59 entries is included.

A Review of Educational Applications of the Computer, Including Those in Instruction, Administration and Guidance

A Series Two Paper From ERIC at Stanford. Robert M. Morgan, Stanford, California: Stanford University, ERIC Clearinghouse on Educational Media and Technology, August 1969. 13 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 032 768).

The educational applications of computers for instruction, administration, and vocational guidance are reviewed. Reports on recent trends in computer-assisted instruction and computer-managed instruction toward forming behavioral objectives and reducing learning time and implementation costs provide an introduction for a description of the Office of Education's proposed program, a Computer Utility for Education Systems (CUES). A bibliography is included.
tives and reducing learning time and implementation costs. A bibliography is included.

Bibliography on Organizational Trends in Schools

Robert H. Anderson. Washington, D.C.: National Education Association, August 1968. 38 pages. EDRS price microfiche 65c, hardcopy not available from EDRS (ED 024 125).

This bibliography on organizational trends in schools lists 386 books, pamphlets, articles, bibliographies, and audiovisual resources published between 1955 and 1968, but mostly since 1965. Topics covered include (1) the educational reform movement and major trends in school organization, (2) cooperative teaching and emerging staff utilization practices, (3) nongraded school organization, (4) pupil grouping and individualized instruction, (5) research and development in teaching studies, individual differences, academic achievement, motivation, prediction of pupil progress, and sex differences, (6) reporting pupil progress, (7) the computer in education, and (8) architecture, equipment, and uses of space.

II. SUMMARIES, OVERVIEWS, AND GENERAL DISCUSSIONS

A number of organizational, philosophical, and operational considerations are discussed in these papers.

Strategies for Development of Computer-Based Instructional Management Systems

Paul [illegible] Kesta, and others. Inglewood, California: Southwest Regional Educational Lab., February 1971. 13 pages; paper presented at annual meeting of the American Educational Research Association (New York, New York, February 5, 1971). EDRS price microfiche 65c, hardcopy $3.29 (ED 046 245).

Recently, several systems bearing the label "Instructional Management Systems" have been developed and reported. An analysis of such systems, however, reveals that most might best be considered instructional monitoring systems. Prior to the development of such a system, the specific components requiring computer support must be identified, the potential cost benefits of such support must be analyzed, appropriate hardware/software configurations must be established, and evaluation of decision rules made more advanced.

New Dimensions for Psychology in Education

Wayne H. Holtzman. Austin, Texas: Texas University, September 1970. 10 pages; paper presented at symposium on "Psychotechnology and Its Impact on Society: 1970, 1980," American Psychological Association, Miami Beach, Florida, September 1970. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 707).

Great strides are being made in the field of individualized instruction, taking into account the many human diversities. Ten years hence technology, given adequate research and development funds, will be at such an advanced state that there will be even greater computer-individual interaction. This technology will provide the flexibility to change radically the social organization and atmosphere of our schools. The role of the teacher will change in such a situation. Psychotechnology, while not only having a major impact on education, will also have a major impact on psychology itself, resulting in a profound identity crisis in psychology by 1980.

Participative Education and the Inevitable Revolution

Albert R. Wight. Estes Park, Colorado: Center for Research and Education, 1970. 52 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 044 766).

Emphasizing self-responsibility, participative education attempts to involve the student in experiences relevant to his future, and to provide him with the opportunity and methodology for learning from these experiences. Students would be allowed to develop self-reliance, self-confidence, and increased self-esteem, and would leave school better equipped for lifelong, continued learning.

New Scheduling Patterns and the Foreign Language Teacher. ERIC Focus Reports on the Teaching of Foreign Languages, Number 18

Jermaine D. Arendt. New York: American Council on the Teaching of Foreign Languages; Modern Language Association of America, ERIC Clearinghouse on the Teaching of Foreign Languages, 1970. 18 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 043 269).

A review of the concept of the "floating" period. The author discusses: (1) flexible modular scheduling; (2) large, intermediate, and small group instruction; and (3) individual and independent study. Specific reference is made to programs making use of learning packages, e.g., minipacs, unipacs, and learning activity pacs. A departure from other kinds of flexible scheduling, called "demand" scheduling, is reviewed. Problems and advantages of flexible scheduling are enumerated. Concluding remarks focus on student achievement, special needs, the teacher, and the quarter or semester plan. An appendix presents recommendations and suggestions of the Conference on Flexible Scheduling and Foreign Language Teaching.

Today's Techniques for Differentiating Teaching

Harry W. Sartain. May 1970. 17 pages; paper presented at the International Reading Association Conference, Anaheim, California, May 6-9, 1970. EDRS price microfiche 65c, hardcopy $3.29 (ED 041 714).

Today's most promising techniques for differentiating reading teaching are noted to be those which focus upon the individuals within the classroom. Short descriptions are given of nine programs which differentiate reading instruction, and the reader is urged to adopt their most promising features. Programs described are intraclass grouping (multiple grouping within the classroom), varied exposure to reading in kindergarten, individualized reading, team teaching, programmed instruction, computer-assisted instruction, Program for Learning in Accordance with Needs (PLAN), Individually Prescribed Instruction, and personalized progress. A 29-item bibliography is included.

The Computer and Curriculum Analysis

Andrew R. Molnar. Washington, D.C.: Department of Health, Education, and Welfare, National Center for Educational Research and Development, March 19, 1970. 38 pages; paper presented at Conference of the Center for Educational Research and Innovation (Paris, France, March 19, 1970). EDRS price microfiche 65c, hardcopy $3.29 (ED 041 481).

Curriculum designers have derived data for instructional purposes from 1) the subject matter, 2) society, and 3) the learner. The computer plays an instrumental role in individualizing the presentation of curriculum derived from these sources. Research on instruction has concerned itself with devising material for individual needs and adapting them to meet the necessities of group instruction. Computer assisted instruction, computer managed instruction, and simulation programs have been developed for a wide variety of subjects. Another significant development in individualization has been the systems approach. Interactive empirical procedures seem to produce more effective instructional materials. A list of references is appended.

Citizens for the 21st Century: Long-Range Considerations for California Elementary and Secondary Education

Sacramento, California: California State Board of Education; Berkeley, California: California State Committee on Public Education, 1969. 485 pages. EDRS price microfiche 65c, hardcopy $16.45 (ED 041 351).

Broad educational objectives and recommendations characterize this long-run planning report. Assuming that the goal of education is to help each child to realize his potential as a human being, producer, and citizen, the investigating committee recommended state legislation covering planning of and timetables for school integration, new teacher education programs, further studies of school organization and instruction, individualized instruction, a permanent educational inquiry system, improved educational financing, and a program to direct public attention to long-range requirements and approaches necessary to education improvement. Various tables and appendixes illustrate and clarify research findings and recommendations.

Individualized Instruction. Prep-16

September 1970. 104 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 041 185).

In a national study of individualized instructional programs for the U.S. Office of Education, Jack V. Edling of the Oregon State System of Higher Education, Corvallis, conducted an in-depth survey of 46 programs in 24 states. Prep Kit, No. 16, reports on that study in 13 documents, covering such subjects as objectives of individualized instruction; diagnostic, instructional, and evaluative procedures; student progress reports, evidence of effects of individualized instruction; problems encountered; recommendations on implementation procedures; a bibliography; a list of current ERIC documents on as well as a list of materials for individualizing instruction; and case studies.

Educational Philosophy and Educational Technology

Glen Heathers. Washington, D.C.: Academy for Educational Development, Inc., 1970. 40 pages; this is one of the support papers for "To Improve Learning; A Report to the President and the Congress of the United States by the Commission on Instructional Technology," ED 034 905. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 771).

Educational technology presents a challenge to educators. It makes possible the instruction of an individual in any course the educator deems necessary. In order to utilize these new opportunities effectively, the educators must decide what the goals are for a person in an automated society. The educator must deal less with the teaching of information and shift to teaching ideas, methods of inquiry, independent learning, personal development, and social living. He must contend with the special problems of poor children, the need for excellence, and the demand for individualized instruction.

The Impending Instructional Revolution

Harold E. Mitzel. 1969. 20 pages; speech presented at the 77th meeting of the American Society for Engineering Education, University Park, Pennsylvania, June 24, 1969. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 462).

The last three decades of the twentieth century will witness a drastic change in the business of providing instruction in schools and colleges. There have been several different concepts of individualization, the most prevalent interpretation focusing on self-pacing or rate-tailoring. The impending instruction revolution will shortly bypass the simplex idea of individualizing instruction and move ahead to the more sophisticated notion of providing "adaptive instruction" for school and college learners, with focus on the tailoring of subject matter presentations to fit the special requirements and capabilities of each learner. Essential to the idea of adaptive education is the means of utilizing new knowledge about individual differences among learners to bring a highly tailored instructional product to the student via computer-assisted instruction in which many identifiable learner variables are taken into account.

Impact of CAI on Classroom Teachers

Duncan N. Hansen; William L. Harvey. Tallahassee, Florida: Florida State University, Computer-Assisted Instruction Center, October 15, 1969. 9 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 034 401).

Conceptualizations concerning role changes of classroom teachers due to the use of computer assisted instruction (CAI) are contingent upon what system is used and how long it takes. Some factors within CAI which may cause teacher role changes are identified.

A Proposed Framework for Developing a New Instructional System

T. H. Bell. Salt Lake City, Utah: Utah State Board of Education, July 1967. 25 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 033 890).

This monograph presents the rationale for the development of a new instructional system; it is part of an effort, sponsored by a consortium of Utah school districts and the State Board of Education, to introduce and implement a systems approach to instruction in Utah public schools. The first half of the paper is a critique of the present instructional system which is described as obsolete because of its failure to adapt to the effective use of available technology. The remainder of the paper outlines a potential alternative designed to utilize more effectively the potential of teachers, programed learning materials, modern textbooks and printed supplementary materials, the computer, instructional television, films, tapes, records, and other audio-visual aids. Included are descriptions of (1) a staff structure with fewer professional teachers but more supplementary professional and nonprofessional personnel; (2) an instructional media center and physical plant to utilize teaching packages and instructional team and individualized teaching patterns; (3) teaching strategies which employ three basic types of learning activities: tutoring; lecturing, explaining, and demonstrating; and individual study. Incorporating various elements of individualized instructional programs and continuous progress plans, a type of open-end education is recommended as a way to enable each child to realize his own potential and make his greatest contribution to society. Aspects of open-end education discussed briefly include a definition of the term (it incorporates nongrading, team teaching, and flexible scheduling), problems with graded schools, use of teacher aides, curriculum patterns, and class and teacher arrangements. A comprehensive proposal for school organization is included. A bibliography of 22 items published between 1961 and 1967 is appended.

Some Factors in the Design of Systems for Computer-Assisted Instruction

Lawrence M. Stolurow. Cambridge, Massachusetts: Harvard University, May 1, 1968. 45 pages. Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia (microfiche 65c, hardcopy $3.00). Document not available from EDRS.

Computer assisted instruction (CAI) can achieve its potential as a tool for individualizing instruction only if the flexible logic and memory capabilities of computers are utilized. An instructional program must be written in such a way that it can handle at least three variables: (a) who is being taught; (b) what is critical; and (c) how the teaching is to be done. The program must also be capable of choosing the most effective mode of instruction in a given instance: problem solving, drill and practice, inquiry, simulation and gaming, or tutorial instruction. Student response data constitute an additional variable. A bibliography supplements the text.

Open-End Elementary Education

NASEC Monograph Series, Spectrum. Paul C. Sowers. Flagstaff, Arizona: Northern Arizona Supplementary Education Center, April 1968. 19 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 030 942).

Computer Assisted Instruction

Education Automation Monograph Series, Number One. Lawrence M. Stolurow. 1968. 94 pages. American Data Processing, Inc., Grosse Pointe, Michigan ($24.00, subscription to the series, a set of four monographs). Document not available from EDRS.

CAI permits individualization electronically. CAI can be used to train problem solving, for drill and practice, to respond to questions, for simulation and gaming, and for tutorial instruction. The CAI system interacts dynamically with the student—it is responsive. References and an appendix on the Harvard University CAI Laboratory are included.

Flexible Scheduling: A Reality

Dwight W. Allen; Donald De Lay. Stanford, California: Stanford University, School of Education. 10 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 027 624).

The computer based Stanford School Scheduling System (SSSS) shows that administrators can be freed from the burden of scheduling without losing the opportunity to make vital educational scheduling decisions. Costs of approximately $1 per student are comparable to costs of manually constructing schedules. Furthermore, a computer can investigate in a few seconds the millions of possible combinations of teachers, students, rooms, and limits of time, thus making it possible to satisfy a high percentage of student schedule requests. Computer scheduling also increases the range of professional decisions possible.

Quality and the Small School

Edwin P. Hildebrand, Ed. Denver, Colorado: Colorado Western States Small Schools Project, August 1968. 53 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 027 107).

The goals of the project are to assist small schools to: (1) provide individualized programs of career selection education; (2) develop methods and techniques of preschool education to overcome cultural disadvantages prevalent in isolated communities; and (3) develop the organizational and instructional patterns essential to successful programs of continuous progress and individualized instruction. Each objective is presented in a separate section with description of the problem involved, methods or programs, evaluation, and observations. Included are several guidelines for educational activities related to individualized instruction which free the teacher to plan curriculum and choose materials. A chapter is devoted to two learning theories with practical application to individualized learning by both students and teachers.

Organizing for Individual Differences. Perspectives in Reading, No. 9

Wallace Z. Ramsey, Ed. Newark, Delaware: International Reading Association, 1967. 133 pages. International Reading Association, Newark, Delaware ($3.00 to members, $3.50 to nonmembers). Document not available from EDRS.

A compilation is made of reports from a conference dealing with workable administrative practices which provide for individual differences. The nature of individual differences as they operate in reading instruction is defined, and various dimensions, such as growth ages, sex differences, intelligence, cognitive abilities and styles, are discussed in the introductory article. Different aspects of individual variations in reading ability are provided for in chapters discussing the following administrative frameworks: in-class grouping, the Joplin Plan and cross-grade grouping, individualized instruction, team reading instruction, reading in the nongraded school, and reading in departmentalized elementary and secondary classes. A summary is made from an overall vantage point, and recommendations are offered. References are included for each article.

III. RESEARCH, ASSESSMENT, AND EXPERIMENTAL FINDINGS

A number of analytical studies are reviewed. Many of these indicate beneficial effects from the introduction of individualization but some had negative findings.

Assessment of Teachers' Attitudes Toward an Individualized Approach to Reading Instruction

Eunice N. Askov. Madison, Wisconsin: Wisconsin University, Research and Development Center for Cognitive Learning, February 1971. 19 pages. Paper presented at the annual meeting of the American Educational Research Association, New York, New York, February 4-7, 1971. EDRS price microfiche 65c, hardcopy $3.29 (ED 048 349).

Elementary school teachers' attitudes toward individualizing reading instruction were examined in the evaluation of the Wisconsin Design for Reading Skill Development (WDRSD). An instrument was constructed in the semantic differential format. Teachers were asked to respond anonymously on adjective scales to eleven example classroom procedures designed as applications of the assumptions of individualized reading instruction. Two studies validated the instrument experimentally. In one, teachers' attitude inventory scores were compared by a t test in two types of schools: Ones in which the WDRSD had been adopted; and ones in which no known emphasis was placed on individualization. Mean inventory scores were significantly higher ($P < .05$) in the schools where individualization was systematically provided for than in the other schools. In another study the change in teachers' attitudes was studied after a school had adopted the WDRSD. Teachers' inventory scores in the fall prior to in-service training were compared by a t test for matched pairs to those obtained in the spring after one year's use of the system. The spring scores were significantly higher ($P < .001$) than those obtained before use of the WDRSD. A copy of the instrument is appended.

An Analysis of Teacher Communications to Individual Pupils When Instruction is Individualized

James L. Neujahr. Paper presented at annual meeting, AERA, 1971. 8 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 048 107).

To examine three teachers' communication to individual students during their attempts to individualize instruction, a class of sixth grade students was videotaped as it spent a week in science, in social studies, and in mathematics. Tapes were analyzed using a modified form of Bellack's observation system. Results give evidence of considerable consistency of teacher role as he reacts with different pupils in an individualized format. His primary function remains soliciting, and the functions he performs least frequently are structuring and responding. Although his functions do not vary greatly, the frequency of interaction varies greatly across pupils, as does the content of the interaction.

Individualization and Needed Research

Jack M. Ott, and others. 1971. 10 pages; paper presented at annual meeting, AERA, 1971. EDRS price microfiche 65c, hardcopy $3.29 (ED 048 106).

Progress in education will follow closely the adequacy of our category system concerning pertinent functions of a child, our understanding of these functions, causes of malfunctions, and the development of techniques specific to a task. Not only is such information necessary to classroom diagnosis and prescription, but it also serves to direct research and development efforts. The medical profession emphasizes diagnostic information more than does education, the practitioner's first task being to arrive at a systematic understanding of his client so that he can focus his efforts more effectively. If individualization of instruction implies that the teacher's task is to provide experiences appropriate to each child's present level of development, potential, interests, etc., then a similar approach is needed for progress in education.

Independent Mathematics Learning as a Function of Teacher Behaviors

Beatrice A. Ward. Berkeley, California: Far West Lab. For Educational Research and Development, February 6, 1971. 22 pages; paper presented at the annual meeting of the American Educational Research Association (February 4-7, 1971, New York, New York). EDRS price microfiche 65c, hardcopy $3.29 (ED 048 002).

This study was designed to determine (1) if teacher use of specified teaching behaviors leads to the identification of differences in the learning outcomes of pupils in group and independent learning situations; and (2) if knowledge of teacher use of specified teaching behaviors relates to the prediction of variance in pupil post-unit scores. The teacher behaviors that were considered emphasized three instructional functions: (a) causing learner awareness of learning goals; (b) evoking learning performance including completion of the learning task and provision of motivation for learning; (c) assessing learning outcomes. The experiment involved teachers who received special training in the use of seven teacher behaviors and teachers who received no training. Two main implications of this study were found. (1) when the learning environment is controlled in terms of subject matter content and materials, and proportion of time devoted to independent vs. group learning, the group learning situation produces superior outcomes. (2) measurement of a specific set of teacher behaviors that define only a limited segment of the total teaching act does aid in the prediction of variance in pupil learning outcomes.

Monitoring the Progress of the Group in an Individualized Reading Program Based on Behavioral Objectives

Anne Buchanan, and others. February 1971. 15 pages; paper presented at the meeting of the American Educational Research Association, New York, New York, February 4-7, 1971. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 925).

An alternative to monitoring instruction via standardized tests is proposed for objective-based individualized instructional programs. It is pointed out that when used in conjunction with the setting of performance goals by the staff, the monitoring procedures assist the staff in focusing upon schoolwide priorities and the feedback provided annually or at intervals through the school year is used to improve individualized instruction.

An Experimental Study of Individualized and Basal Reader Approaches to Teaching Reading in Grades One and Two

Anna Elizabeth Teigland, and others. February 1971. 8 pages; paper presented at the conference of the American Eduational Research Association, New York, New York, February 4-7, 1971. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 901).

The criteria used to compare the effectiveness of the individualized and basal reader approaches in this study were based on vocabulary, comprehension, and attitude toward reading as well as the number, type, and difficulty of books voluntarily read during second grade. Near the end of Kindergarten, children in three schools were randomly assigned to one of the two approaches. At the end of second grade there were 65 basal pupils and 69 individualized approach pupils for whom data was available. Because the Kuhlman-Finch Intelligence Test scores and the California Test of Mental Maturity scores indicated higher means for the basal group, adjusted means were used in reporting results. When the California Reading Test was administered at the end of second grade, the individualized reading group had significantly higher scores on comprehension than the basal group; the vocabulary scores favored the individualized group but were not significant. No significant differences were found in attitude toward reading from the San Diego County Inventory of Reading Attitudes. However, girls made significantly higher scores than boys on comprehension, vocabulary, and attitude toward reading. The quantity, variety, and difficulty of books read overwhelmingly favored the individualized approach. Tables are included.

Reading Skill Centers: A Comprehensive Attack on Reading Problems Commonly Encountered in Urban Schools

Stephen H. Davidoff, and others. February 7, 1971. 24 pages; paper presented at the meeting of the American Educational Research Association, New York, New York, February 4-7, 1971. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 892).

Seven reading skill centers were established to focus on areas of need experienced by Philadelphia school children. Programs were individually prescribed, and children were assigned to materials and to center time depending on their individual needs. Coordination with classroom activities was provided as much as possible. Skill centers were set up in schools whose students had done poorly on a 1968 administration of the Iowa Tests of Basic Skills (ITBS). Their progress was compared to that of control groups of similar ITBS performance. Analysis of variance results indicated that the experimental group achieved significantly better in reading comprehension and in total progress than did the control group. It was concluded (1) that reading performance, word attack skills, and comprehension skills were improved by the program and (2) that the combination of diagnosis and individual prescription with provision for sufficient and individualized instruction appeared to be a fruitful approach toward reversing underachievement in urban schools. Tables and references are included. Appendixes provide an estimated budget and behavioral objectives for reading skills in pre-primer through book-six levels.

Markham: Report of the Evaluation of an Educational Program, 1968-70

Julian Biller; William Meredith. Fort Lauderdale, Florida: Broward County Schools, 1970. 27 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 053).

The Robert C. Markham Elementary School represents a joint federal-local effort to educate children of migrant workers. The school provides a specially designed, in-school compensatory program, which views the child as an individual. Markham School is nongraded and emphasizes team teaching approaches. Children enter the school at age five and progress at their own rate. The individualized program has as its core a phased or sequential structure for mastering skills in communication and mathematics; other subjects are taught via the unit method. In addition, there are tutoring services and extended day programs for the students. In 1967-68 a local achievement test was created in order to measure development; the results indicate that the Markham students were on par with the control students. This evaluation, however, did not provide adequate controls for differences in socioeconomic status. The 1969-70 report concludes that Markham students were, on the average, more disadvantaged than control subjects. However, the relative average achievement of these Markham students appeared to be higher than that of their controls.

Feedback Information in the Comprehensive Monitoring of Educational Achievement

Paul D. Pinsky. Stanford University, California: Stanford Center for Research and Development in Teaching, October 1970. 20 pages; paper presented at the 11th American meeting of the Institute of Management Sciences, Los Angeles, California, October 1970. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 014).

This paper considers the design and analysis of feeding back information about achievement test results to teachers and students in a high school classroom. Three basic types of information are considered: feedback for individual students, feedback for homogeneous groups of students, and feedback for curriculum evaluation. Teachers' comments, as well as statistical analysis, has produced feedback information designed so that both teachers and students can dynamically make decisions concerning instructional activities. Data from several years of classroom monitoring in the subject areas of history and mathematics is presented.

The Relationship of Intellective, Personality, and Biographical Variables to Success and Its Prediction in an Independent Study Science Course at the College Level

Michael Szabo. 1969. 179 pages. University Microfilms, Ann Arbor, Michigan (microfilm $3.00, xerography $8.20). Document not available from EDRS.

Selected intellectual, personality, and biographical variables were used in a multiple-correlation study to predict success in an independent study course and in a traditionally organized lecture-laboratory course in college biological science. The sample consisted of 630 Purdue underclassmen. Scores on the Guilford-Zimmerman Temperament Survey, high school grades in science, mathematics, social studies and English, high school graduation rank, CEEB and SAT scores, high school counsellors rating of achievement-oriented personality variables, and biographical data from a 22-item instrument were used as predictor variables. Some additional variables were developed from interactions of these variables. There were differences in the best predictors of success on the two types of courses. For example, verbal aptitude and prior science achievement were related to final grade in the traditional course, but high school social studies average was related to final grade in the independent study course. The addition of personality and biographical data to intellectual variables increased the efficiency of prediction.

Self-Concept, Value Orientation, and Achievement Level of Lower Class Elementary School Children in Two Types of Educational Programs

Claer Dethmers. Minneapolis, Minnesota: Minnesota University, 1968. 145 pages. University Microfilms, Ann Arbor, Michigan (microfilm $3.00, xerography $6.80). Document not available from EDRS.

Compared were the effects of an innovative and a traditional teaching approach on the achievement, self-concept, and sense of control scores of fifth and sixth grade children from lower class family backgrounds. Prior to treatment, the students in the two schools were comparable on economic deprivation, educational deprivation, achievement, ability, and educational experience. The innovative approach utilized team planned instruction, departmentalization, individualized instruction, and contracts. The traditional approach utilized self-contained classrooms and conventional instructional materials. Significant differences, all in favor of the traditional program, occurred in measures of composite skills, vocabulary skills, language skills, arithmetic skills, and the self-concepts of physical ability, social relations–same sex, physical appearance, mental ability, work habits, happy qualities, and total self.

Independent Study: An Investigation of the Effectiveness of Independent Study of Novel Mathematics Materials in the Elementary School

Lester Albert Becklund. Minneapolis, Minnesota: Minnesota University, 1968. 341 pages. University Microfilms, Ann Arbor, Michigan (microfilm $4.40, xerography $15.85). Document not available from EDRS.

Reported are the results of a study made to determine the effects of independent study with experimental mathematical materials upon selected achievement measures, and the grade level at which these materials can be used most effectively. Experimental treatments were randomly assigned to three classes within two elementary schools at each of the grade levels three, four, and five. The differences which were discovered were not found to be significant.

The Development and Implementation of a Model for the Design of Individualized Instruction at the University Level

James Gary Lipe. Tallahassee, Florida: Florida State University, Computer-Assisted Instruction Center, October 30, 1970. 196 pages. National Technical Information Service, Springfield, Virginia (microfiche 95c, hardcopy $3.00). Document not available from EDRS.

An interactive model for the design of individualized instruction was developed and implemented, with activities explicitly prescribed for the instructor and the educational technologist. Using this model–PIERIM (Production, Implementation Evaluation and Revision of Instructional Modules)–a traditional elementary education course was converted into 25 instructional modules. The modules were used in a conventional classroom (N = 19), revised on the basis of learner performance, and then used in a self-instruction environment (N = 28). The pre- and post-test performances of the two groups were approximately equal. Evaluation of the modules was undertaken by faculty members who ranked the instructional modules on the basis of the relative importance of a teacher candidate being able to demonstrate the behavior described by the modules. Rank correlation between the two sets of rankings was .71 for the total set of modules.

Learner and Program-Controlled Sequences of Computer-Assisted Instruction

William P. Oliver. Toronto, Ontario: Ontario Institute for Studies in Education, February 1971. 19 pages; paper presented at the annual meeting of the American Educational Research Association (New York, New York, February 5, 1971). EDRS price microfiche 65c, hardcopy $3.29 (ED 046 246).

This study defined a type of information-processing task analysis and an index relating different instructional sequences to this analysis. One hundred sixty-four college students were taught, with computer-assisted instruction, an imaginary science by various instructional sequences or by selecting their own sequence. A program-controlled instructional sequence conforming to the sequence defined by the task analysis was most effective. Learner-controlled sequences yielded poor performance. The contributions of the cognitive abilities of induction, associative memory, and general reasoning to performance under learner and program-controlled sequence and the ability by sequence interactions were shown.

Methodological Considerations in On-Line Contingent Research and Implications for Learning. Technical Report

Marna C. Whittington. Pittsburgh, Pennsylvania: Pittsburgh University, Learning Research and Development Center, October 1970. 76 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 046 239).

Methods for the implementation of on-line contingent research are described in this study. In a contingent experimentation procedure, the content of successive experimental trials is a function of a subject's responses to a previous trial or trials (in contrast to traditional experimentation in which the subject is presented a previously established sequence of trials that is constant for all subjects). Computer control of the sequencing of stimuli on the basis of the subject's responses permits the adaptation of stimulus presentations to the response history of the learner, facilitating the optimization of learning outcomes. The manner in which contingent research designs enable the researcher to examine learning problems that are analogous to the problems of instructional technology is demonstrated, with particular emphasis placed on the implications of contingent research techniques for task management, psychological measurement, and research design. A systematic analysis of contingent decision algorithms and on-line programs is presented, and the application of these programs is examined and compared with non-contingent research designs with respect to procedure, data collection, and efficiency.

Effects of Contingency Management and Quasi-Individualized Instruction on Academic Performance and Attitudes. Final Report

Dennis E. Nelson; G. Brian Jones. Palo Alto, California: American Institutes for Research in the Behavioral Sciences, November 1970. 124 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 046 034).

This study postulated that if contingency management techniques were used to supplement an instructional system in which efforts toward individualization were being made, disadvantaged students would be influenced to produce more, and a higher quality of, academic behaviors and more favorable attitudes toward academically relevant concepts than would be produced by that instructional system alone or by conventional instruction. This report describes this study in terms of: (1) the problem and research strategy, including background and research techniques; (2) the experimental design and procedures, including treatment conditions, criterion instruments, and data collection; (3) results and discussion, including hypotheses on experimental versus control subjects, subjects "on" versus subjects "off" contingency management; and (4) summary, conclusions, and implications.

An Approach to the Psychology of Instruction

R. C. Atkinson; J. A. Paulson. Stanford, California: Stanford University, Institute for Mathematical Studies in Social Science, August 14, 1970. 38 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 549).

This paper describes three models of learning theories, derives optimal presentation strategies for the models, and compares the effectiveness of the strategies in two computer assisted instruction experiments. The three models described

are: (1) the linear, or response-insensitive model, in which the error probability for a given item depends on the number of times it has been presented; (2) the all-or-none model, in which the error probability for a given item depends on the number of times it has been answered correctly; and (3) the random-trial increments (RTI) model, which is a compromise between the linear and the all-or-none model. One of the experiments compared the linear model with the all-or-none strategy and found that the all-or-none strategy accounted for significantly higher scores on both immediate and delayed post-tests. The second experiment compared all three strategies, and found the RTI strategy to be most effective.

The Effects of Assessment and Personalized Programming on Subsequent Intellectual Development of PreKindergarten and Kindergarten Children. Final Report

James M. Dunlap; Alice O. Coffman. Montana: University City School District, July 1970. 52 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 198).

This study tests two hypotheses: (1) prekindergarten children who are provided with a personalized program based on individual assessment of their developmental skills will increase their intellectual abilities and will learn at a higher level than children without this program, and (2) these same children will retain their acquired superiority through the first and second primary years. Subjects were 126 first and 103 second year children in matched experimental and control groups. Experimental and control groups were compared on pretests and posttests given each year of the experiment over a span of four years. Both hypotheses were supported in part. At prekindergarten level, gains from personalized programming were consistent enough to point out that 4-year-old children had responded well to brief daily individualized sessions of work in game-like situations which were geared to development of sensory, language, motor, or cognitive skills. The positive effects did not carry over to the end of the following year. Although the experimental program made no long-range impact on girls, the cumulative impact on boys indicated they outperformed their control counterparts as well as the girls.

A Diagnostic-Prescriptive Approach to Preschool Education

Mabel E. Hayes; Myron H. Dembo. Los Angeles, California: University of Southern California, March 1970. 15 pages; paper presented at the annual meeting of the American Educational Research Association, Minneapolis, Minnesota, March, 1970. EDRS price microfiche 65c, hardcopy $3.29 (ED 041 622).

This study attempted to develop a diagnostic-prescriptive curriculum program to improve the school readiness of disadvantaged preschoolers. The language development patterns of 32 3-, 4-, and 5-year-olds were diagnosed by use of the Illinois Test of Psycholinguistic Abilities (ITPA). Teachers were trained to use this information to provide an instructional program based on a curriculum developed around the subtests of the ITPA. Stratified sampling based on intelligence test scores was used to assign 16 subjects to the experimental and 16 to the control group. Both groups were pre- and posttested on the Caldwell Preschool Inventory (CPI). The ITPA was used to test the language abilities of the experimental subjects who for four months received a special hour-a-day lesson based on individual language needs. Teachers were free to adjust or alter lesson plans. Posttest CPI scores indicated that the diagnostic-prescriptive program significantly improved the school readiness of the experimental subjects.

The Use of Individual and Group Goal Setting Conferences as a Motivational Device to Improve Student Conduct and Increase Student Self-Direction: A Preliminary Study

Juanita S. Sorenson, and others. Madison, Wisconsin: Wisconsin University, Research and Development Center for Cognitive Learning, March 1970. 23 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 621).

The purpose of this study was to describe the implementation of a system of individually guided motivation utilizing individual and goal setting conferences. Before students were assigned to groups, they completed a self assessment form on which they rated themselves on 20 behaviors. Teachers from each unit, using a consensus method, also evaluated each student on the same set of behaviors. Within each unit students were randomly assigned to one of four conditions: No conferences, individual conferences, small group conferences, or medium group conferences. Teachers encouraged students to define the meaning of behaviors and to pick a behavior or a group of behaviors on which to improve. The child would then set goals for himself. The experimental period lasted 8 weeks. At the end of the period, another assessment form identical to the initial one was completed by the student and the teachers. Overall behavior rating results indicated that there was a tendency for the students to show greater gains in pre-post ratings than students in the control groups. Students receiving individual conferences gained more than students in small or medium groups. In general, the teacher ratings seemed to change more from pre- to post-assessment than did student ratings.

The Effect of Instructional Variables on Certain Indices of Student Perseverance

George Reef Miller. Pittsburgh, Pennsylvania: Pittsburgh University, Learning Research and Development Center, 1969. 88 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 855).

This study investigated the effect of learning task, instructional quality, and teacher on three indices of perseverance: attending

time, distractability, and attention span. Data were secured from 219 students learning elementary school mathematics in an individualized instruction program, the Individually Prescribed Instruction (IPI) system developed by the Learning Research and Development Center at the University of Pittsburgh. Results indicated that the effect of a lesson on pupil perseverance depends upon the particular student. There was also some evidence that the performance of the teacher is a factor in pupil perseverance.

The Relative Effectiveness of Five Instructional Strategies

Emir H. Shuford, Jr.; H. Edward Massengill. Lexington, Massachusetts: Shuford-Massengill Corp., June 1967. 17 pages. Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia (microfiche 65c, hardcopy $3.00). Document not available from EDRS.

Logic and mathematics are used to gain some insight into the effective and efficient application of instruction. A pupil's state of knowledge is represented by the degree of confidence he possesses in the subject matter. A cost, gain, and return from instruction are associated with each possible initial degree of confidence and each instructional sequence. Two group strategies, two individualized strategies, and a precisely-tailored instructional strategy are compared on the basis of expected return from instruction per individual strategy for seven distributions of initial knowledge. The relative effectiveness of instruction is found to depend critically upon the distribution of initial knowledge for the class of pupils.

Responsive Environment Program Brooklyn, N.Y., September 1968-June 1969: The Talking Typewriter. Final Report

Benjamin L. Israel; Zelda Litwin. Brooklyn, New York: New York City Board of Education, Responsive Environment Program Center, August 1969. 91 pages. United States Department of Commerce, Institute for Applied Technology, Springfield, Virginia ($3.00). Document not available from EDRS.

This progress report covers a 6-month period in the second year of an experimental research project to test the utility of the Edison Responsive Environment Talking Typewriter as a major tool for teaching both initial and remedial reading to educationally disadvantaged youth. Conducted in six schools in Brooklyn, New York, the study included experimental and control groups at four age levels: Kindergarten (82 pupils), first grade (388 pupils), eighth grade (31 pupils), and ninth grade (21 pupils). Statistical analyses of the study's data are explained for each age level. In almost every instance the study showed greater reading achievement by the experimental groups using the Talking Typewriter.

Study of Training Equipment and Individual Differences: The Effects of Subject Matter Variables

G. Kasten Tallmadge, and others. Palo Alto, California: American Institutes for Research in Behavioral Sciences; Naval Training Device Center, Orlando, Florida, May 1968. 96 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 034 020).

Two separate subject matter areas, which were felt to represent two distinct types of learning situations, were selected for investigation, namely, a kind of logico-mathematical procedure—the transportation technique, and a visual form discrimination task—aircraft recognition. Two separate courses were developed for each subject matter area. One reflected an inductive instructional approach and the other a deductive method. Each of the four courses was administered to between 55 and 60 Navy enlisted men, and 28 measures of aptitude, interest, and personality variables were obtained on each subject. The most significant finding was the significant second order interaction among all three independent variables. The results of this study strongly support the existence of learning styles and suggests that multi-track instruction based on learning styles might be a cost-effective way of enhancing learning.

Pupil Attitudes, Achievement and Behavior in a Multi-Age Nongraded School. Final Report

Francis X. Vogel; Norman D. Bowers. Evanston, Illinois: Northwestern University, April 1968. 113 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 025 030).

This study determined the effect of school organization on pupil attitudes, achievement, conceptual maturity, and classroom behavior. Ten teachers in each of three groups in a midwestern school district were selected and 707 pupils enrolled in their classes comprised the sample. An experimental group was placed in a nongraded form of organization, while control groups retained the traditional form of organization. The pupils in all groups were subdivided into three age groups: normal age, underage, and overage. The results of tests administered to the students suggested the following conclusions: (1) the nongraded form of organization encouraged pupil development in conceptual maturity and participation in group activities, (2) teachers in the nongraded school were more tolerant of "disorderly pupil behavior" than were teachers in the graded schools, (3) the graded form of organization encouraged pupil development in achievement, attitude toward school, and contributing activities during usual teaching episodes, (4) the differences among the age groups were generally as expected, and (5) the behavior of the pupils identified as underage, normal age, and overage supported the multiage nongraded plan of organization.

Identification and Definition of Subject-Matter Content Variables Related to Human Aptitudes, Volume II, Appendices

Russell P. Kropp, and others. Tallahassee, Florida: Florida State University, Institute of Human Learning, January 1967. 278 pages. EDRS price microfiche 65c, hardcopy $9.87 (ED 010 628).

The sets of instructional materials presented in this volume were designed to call into the learning situation the most highly developed cognitive aptitudes of individual students. The assumption behind their design was that learning difficulties in various subject-matter areas could be minimized by altering the content of textual material to fit the individual's aptitude pattern. Four sets of data are included–(1) materials for redundancy studies (redundancy in textual material), (2) learning materials and tests for studies of elementary set concepts, (3) materials and tests for vocabulary learning studies, and (4) learning materials for mathematical operations studies. Related information may be found in ED 010 627.

Identification and Definition of Subject-Matter Content Variables Related to Human Aptitudes, Volume I

Russell P. Kropp, and others. Tallahassee, Florida: Florida State University, Institute of Human Learning, January 1967. 235 pages. EDRS price microfiche 65c, hardcopy $9.87 (ED 010 627).

An exploratory study was conducted on the interaction between cognitive aptitudes and varied instructional treatments (teaching materials and teacher methods) to determine if learning difficulties could be significantly minimized by altering the content of instructional treatments to fit the cognitive aptitude patterns of individual learners. The authors suggested that achievement of the student would be directly related to the congruence between his pattern of aptitudes and the "form of content" of the material to be learned. To substantiate this contention, a program of highly simplified studies was structured and conducted. Seven series of studies were undertaken among different grade levels. Results of these studies demonstrated the feasibility of controlling aptitude-instruction interactions to enhance learning in a variety of subject-matter areas and at different age and grade levels. Related information may be found in ED 010 628.

IV. MEDIA, TECHNOLOGY, AND RESOURCES

In keeping with the goals of the ERIC Clearinghouse for Media and Technology, a somewhat broader look was taken at the relation of media to the individualization process. While the majority of the entries included in this section bear directly on the process of individualization, some of the documents are broader in scope and deal with additional issues.

The Brevard County Reading Laboratory Manual

Fay Bennett, Ed., and others. Titusville, Florida: Brevard County Board of Public Instruction, June 30, 1970. 271 pages. EDRS price microfiche 65c, hardcopy $9.87 (ED 048 141).

The six chapters of the guide deal with (1) the roles and relationships of the reading laboratory teacher, principal, curriculum coordinator, reading clinician, classroom teacher, and pupil; (2) utilization of reading laboratory facilities, including design, equipment, and storage facilities; (3) pupil placement and scheduling; (4) individualized approach, with descriptions of recommended diagnostic instruments and the design of programs for individual pupils; (5) materials and equipment; and (6) a selected bibliography.

Authoring Individualized Learning Modules: A Teacher Training Manual

Kenneth A. Walter. Rockville, Maryland: Montgomery County Public Schools, November 1970. 225 pages; Project Reflect Computer-Assisted Instruction Project, Title III, ESEA of 1965. EDRS price microfiche 65c, hardcopy $9.87 (ED 047 529).

The manual is organized into four major parts: (1) "A Model for Individualizing Instruction," (2) "Designing an Individualized Learning Module," (3) "Developing an Individualized Learning Module," and (4) "Analysis and Assessment of Effectiveness." A selected bibliography is appended.

Elementary School Media Programs: An Approach to Individualizing Instruction

Dorothy Barclay Gilstrap, Ed. Washington, D.C.: American Association of Elementary, Kindergarten, and Nursery Educators, 1970. 32 pages; a Study/Action Publication Series. Publications-Sales Section, National Education Association, Washington, D.C. ($1.00). Document not available from EDRS.

Introduces readers to the media program concept and offers practical assistance to those interested in establishing or expanding media programs. References for further study and action are appended.

Analysis and Approach to the Development of An Advanced Multimedia Instructional System. Volume I. Final Report

William E. Rhode, and others. Bladensburg, Maryland: Westinghouse Learning Corp., May 1970. 436 pages. National Technical Information Service, Springfield, Virginia (microfiche 95c, hardcopy $6.00). Document not available from EDRS.

In order to examine the possibilities for an advanced multimedia instructional system, a review and assessment of current instructional media was undertaken in terms of a functional description, instructional flexibility, support requirements, and costs. Following this, a model of an individual instructional system was developed as a basis for further analysis. Final comparisons and trade-offs among the media were then made to arrive at a recommended media configuration which could serve as a multimedia base for an individualized instructional system. Requirements and features of an automated management information and control subsystem to provide necessary operational control of the total instructional system are outlined and discussed. The main features of a generalized plan for the development of such a system are described.

Learning Centers in a Self-Contained Classroom

Marilyn Simmons. Annapolis, Maryland: Anne Arundel County Board of Education, 1970. 15 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 046 647).

Essentially a learning center consists of designated areas within the classroom where children may go to do a specific activity related to concept development or skill reinforcement. Learning centers are based on four concepts: self-selection, self-motivation, self-pacing, and self-correction. Steps to take in initiating a learning center are listed. Sample worksheets, activities, and organizational charts are included.

A New Kit of Tools for Designing Instructional Systems

Polly Carpenter. Santa Monica, California: Rand Corp., December 1970. 14 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 046 214).

To assist planners of instructional media systems, a combination of analytical and synthetical processes are being devised. This "Kit of Tools" is really a model of instructional system design, not a model of any particular instructional system. The policy-making process is displayed in a table and then explained. The communication media to be considered are shown in another table which is self-explanatory. A flow chart illustrates the process of choosing a media class. Next to be completed is a formulation of rules for media system design and an assemblage of cost-estimating relationships. The model being developed may be extended to such functions as class scheduling and curriculum planning.

Instructional Technology and the School Administrator. Final Report

Stephen J. Knezevich, Ed.; Glen G. Eye, Ed. Washington, D.C.: American Association of School Administrators, 1970. 143 pages. EDRS price microfiche 65c, hardcopy not available from EDRS (ED 044 789).

Incorporates a review of interesting and meaningful issues in instructional technology, provides a description of its current status, identifies recent and significant innovations in the teaching or learning process, examines the existing evidence based on research or experience that supports newly developed techniques and approaches to instruction, and appraises the validity of claims for instructional innovation.

The Contribution of Behavioral Science to Instructional Technology

Monmouth, Oregon: Oregon State System of Higher Education, Teaching Research Division, 1967. 421 pages. EDRS price microfiche 65c, hardcopy not available from EDRS (ED 041 448).

A series of five papers is presented here in an effort to relate the problems of instructional technology to insights and evidence from the behavioral sciences. One paper describes the application of present knowledge and empirical methodology, in the form of the systems approach, to the solution of particular behavioral problems. A second paper has as its focus learner outcomes (e.g., concepts, principles, skills, personality characteristics), learning processes (information selection, transmission, storage, transformation and retrieval), and the conditions of learning, that is, the materials and procedures used in the process of instruction. A third paper deals with the many ways individuals differ and with the problem of designing instructional materials and/or systems in such a way that they are appropriate for learners who possess varying patterns of characteristics. Recent media research is summarized in the fourth paper and the scientific and instructional uses of various technologies are considered. The last paper addresses the question of determining the essential structure of behavioral science and its relationship to instructional technology. Each paper is followed by a bibliography.

Lab Software for the Seventies

Renee Sherrow. March 30, 1970. 11 pages; speech delivered at regional meeting of the National Association of Language Laboratory Directors on March 20, 1970, Boston, Massachusetts. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 798).

Convinced that weaknesses in the design of materials have led to the misuse and decline of the language laboratory, as well as to student boredom, the author offers alternative approaches in laboratory scheduling and materials design. The electronic classroom, student discipline, team teaching, laboratory supervision, taped speech speed, textual criticism, illustrations, tape cassettes, and individualized instruction are discussed.

Teleinstruction and Individualized Learning

C. R. Carpenter. Washington, D.C.: Academy for Educational Development, Inc., 1970. 24 pages; this is one of the support papers for "To Improve Learning; A Report to the President and the Congress of the United States by the Commission on Instructional Technology," ED 034 905. EDRS price microfiche 65c, $3.29 (ED 039 766).

"Teleinstruction" is used here to convey the concept of the use of equipment, processes, and procedures which provide instruction or the stimulation of learning at a distance from the original source of the stimulus materials. The author also defines the multi-media approach to learning and discusses ways in which the multi-media approach may be of aid in individualizing instruction. He discusses learner adaptations and identifies some of the patterns of use of teleinstruction.

Educational Technology in New York State: Theory, Practice, and the Future

Norman D. Kurland. Washington, D.C.: Academy for Educational Development, Inc., 1970. 33 pages; this is one of the support papers for "To Improve Learning; A Report to the President and the Congress of the United States by the Commission on Instructional Technology," ED 034 905. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 757).

The theory behind the use of educational technology in New York State is discussed: that the major contribution of technology to education should be to help achieve individualized instruction and help students become self-motivating, self-directing independent learners.

Learning Theory, Educational Media, and Individualized Instruction

Robert M. Gagne. Washington, D.C.: Academy for Educational Development, Inc., 1970. 22 pages; this is one of the support papers for "To Improve Learning; A Report to the President and the Congress of the United States by the Commission on Instructional Technology," ED 034 905. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 752).

Instruction and learning encompass more processes than are included in learning theories themselves. Instruction involves gaining and controlling attention, stimulating recall, guiding the learning, providing feedback, arranging for remembering, and assessing outcomes. These functions are performed by various media of instruction, but ultimately by the learner himself. Learning is, after all, an individual matter. It is unlikely that one single medium is best fitted to perform all the functions of learning. It seems likely that carefully designed combinations of media may be required to achieve the kind of instruction that is now effective, and which at the same time exploits the properties of media to the best advantage.

Computer-Assisted Instruction and Its Potential for Individualizing Instruction

John E. Coulson. Washington, D.C.: Academy for Educational Development, Inc., 1970. 30 pages; this is one of the support papers for "To Improve Learning; A Report to the President and the Congress of the United States by the Commission on Instructional Technology," ED 034 905. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 705).

Individualized instruction allows the mode, content and sequence of instruction to be tailored to the individual's needs at any moment in time. A computer is an important tool in individualizing instruction. The computer can be used as a teaching machine, a problem solving tool, or as a tutorial system. The remainder of this paper is a survey of the state of the art in computer-based tutorial systems with special reference to the work being done at the System Development Corporation. A short list of references is provided.

A Study of the Effectiveness of Utilizing Individualized Filmstrips, Tapes, and Coordinated Worksheets as Instructional Tools for Beginning College Mathematics Classes. Final Report

Richard E. Banister. Gilman Hot Springs, California: Mount San Jacinto College, February 1970. 13 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 038 944).

This study compared the mean scores of the final examinations given to two populations of junior college students taking college algebra by two instructional methods. The control group received instruction by the traditional approach of lectures and classroom discussion; while the experimental group had their lectures and discussions supplemented by multimedia lessons which could be taken in the college library outside of the regularly scheduled class period on a voluntary basis by those students that felt they needed extra instruction. A statistical treatment of the data using the t test showed a significant difference in the achievement of the two groups. The experimental group's achievement was significantly higher than the control group's achievement at the 1% level of confidence.

Instructional Materials: Educational Media and Technology

Jacob T. Hunt, Ed. Washington, D.C.: American Educational Research Association, April 1968. 196 pages. American Educational Research Association, Washington, D.C. ($2.00). Document not available from EDRS.

This issue of the "Review of Educational Research" attempts to cover the larger issues and to organize around some of the problem lines of instructional materials in educational media and technology. In its four chapters, each with a different author, the research review encompasses five broad areas: the design and selection of media, utilization and management factors, learner variables, learning objective variables, and the effects of media and media systems on school organizations and operation. Each chapter is followed by a bibliography.

Project Reflect: Computer-Assisted Instruction Project. Annual Report June 1968 to June 1969

B. Jean Wastler, Ed. Rockville, Maryland: Montgomery County Public Schools, 1969. 124 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 037 058).

The terminal objective of Project Reflect is the design of a model plan which could be utilized by other public school systems in the implementation of validated and feasible CAI technologies. Project Reflect is designed to answer questions such as: which basic CAI techniques and strategies are effective in the public school environment for which specific subject matter disciplines and for what student target populations? What resources (personnel, materials, equipment, money, etc.) and planning are necessary to implement those feasible CAI applications? The activities to date deal with planning, equipment, staff development and modular instructional packages.

Principles and Practice of Instructional Technology. Participant's Workbook

Palo Alto, California: General Programmed Teaching, 1969. 163 pages; document is one component of a course of instruction that includes prerecorded audio tapes and filmstrips. EDRS price microfiche 65c, hardcopy $6.58 (ED 035 313).

A course of instruction in instructional technology was designed consisting of pre-recorded audio tapes, filmstrips, and this workbook. The workbook is in looseleaf form with space for notes and is to be retained by the participant on completion of the course. Fifteen units are outlined covering behavioral objectives, tests, stimulus and response, content analysis, and validation. Each unit consists of several stated objectives, some background information, a set of questions, and a summary. A glossary is provided.

V. SELECTED SYSTEMS APPROACHES

Because of their national nature, recent papers related to PLAN and IPI are separately categorized. Information about PLAN documents and reprints may be requested from the American Institutes for Research, Palo Alto, California, or from Westinghouse Learning Corp., Palo Alto, California. Information about IPI documents and reprints may be obtained from the Learning Research and Development Center, University of Pittsburgh, Pennsylvania, or from Research for Better Schools, Philadelphia, Pennsylvania.

PLAN Documents

Evaluative Uses of Unconventional Measurement Techniques in an Educational System

Steven M. Jung. Palo Alto, California: American Institutes for Research, September 1970. 18 pages; from symposium "PLAN in Operation–A Summary of Four Years Experience in the Evolution of an Educational System," at the American Psychological Association Convention, Miami, Florida, September 1970. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 693).

The critical incident technique was utilized to identify important aspects of student behavior in Project PLAN which were felt to represent positive exemplars of these goals. From this basis, student self-report procedures were developed. These procedures were applied to situations which were structured according to cues obtained from the original critical incidents. The weight of the findings supports the tentative conclusion that PLAN students are making good progress.

Teacher Behavior in PLAN and Control Classrooms Using the PLAN Teacher Observation Scale

Margaret T. Steen; Dewey Lipe. Albuquerque, New Mexico: Westinghouse Learning Corp., Behavior Systems Division; Parkersburg, West Virginia: Wood County Schools, 1970. 41 pages; paper presented at annual meeting, American Psychological Association, Miami Beach, September 1970. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 586).

A study was conducted to determine the effectiveness of the PLAN teacher training program in changing teacher classroom behavior. It was hypothesized first that PLAN teachers at the primary, intermediate, and secondary levels and all levels combined will spend more time than control teachers in a) diagnostic and didactic inquiry, b) decision facilitation, c) leading small group discussion, d) tutoring in a small group, and e) giving positive verbal or nonverbal messages, and second that control teachers at the same levels will spend more time than PLAN teachers a) providing content in small or large group discussion, b) giving negative verbal or non-verbal messages, c) managing records, d) managing learning materials and equipment, and e) interacting with a large group of students. Hypothesis 1 was partially supported in a, b, c, and d. Hypothesis 2 was supported in a and e and partially supported in b.

The PLAN Classroom. A Guide for Consultants

1969. 18 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 576).

This document is a guide for consultants observing teacher behavior, its effects on students, and learning environment conditions in a PLAN (Program for Learning in Accordance with Needs) classroom. (Appended are a series of 27 questions and answers which describe PLAN, an individualized, computer-assisted instructional system initially operating in 12 school districts.)

PLAN Social Studies: The Match Between Long-Range Objectives and the 1970-71 Curriculum

Vincent N. Campbell, and others. Palo Alto, California: American Institutes for Research, July 1970. 80 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 491).

PLAN social studies curriculum attempts to assure that each student achieves educational objectives appropriate to his individual needs and interests. The guiding framework is presented in the form of a list of over one hundred long-range objectives (LRO's). The major objective areas are: inquiry, problem-solving and planning, affective objectives, social skills, quantitative skills, and knowledge objectives. Chapter 3 describes the curriculum for each level roughly corresponding to grades one through twelve, emphasizing the content and settings to which major objectives are applied. Chapter 4 presents a series of charts in which the explicit instructional objectives of the existing curriculum are identified both by level and by the (LRO) they serve.

The Development of Procedures for the Individualization of Educational Programs

James A. Dunn. September 1970. 17 pages; paper presented at the annual convention of the American Psychological Association, Miami Beach, Florida, September 5, 1970. EDRS price microfiche 65c, hardcopy not available from EDRS (ED 043 700).

Project PLAN (Program for Learning in Accordance with Needs) is an ungraded, computer supported, learner oriented, individualized program of education for elementary and secondary levels. This paper reviews and describes the development and improvement of the individualization procedures over a period of four years of operation of the program. Data and sample sheets are included.

Project PLAN: Guidance Through the Instructional Process. The Accommodation of Individual Differences in the Development of Personal Programs of Study

James A. Dunn. Washington, D.C.: American Institutes for Research; American Personnel and Guidance Association; American Psychological Association, August 1969. 18 pages; papers presented at American Psychological Association Convention, Washington, D.C., August 31-September 4, 1969; and at the American Personnel and Guidance Association Convention, Las Vegas, Nevada, March 30-April 3, 1969. EDRS price microfiche 65c, hardcopy $3.29 (ED 035 907).

Project PLAN is designed to make educational programs fit the needs of individual learners, and the problem of how such a curriculum can be implemented is discussed. In addition to individualization of what is to be learned and amount of exposure to learning matter, individualization must also be based on the student's learning style. The guidance program calls for experiences which will increase the child's knowledge and skill in the areas of: (1) independent learning, (2) rational decision making, (3) the assessment and implication of individual differences for vocational, avocational and social choice, (4) vocational information, and (5) leisure and citizenship opportunities.

IPI Documents (Individually Prescribed Instruction)

Evaluation of the Variability Among Students in Total Number of Units Mastered Per Year

Robert F. Boozer. Philadelphia, Pennsylvania: Research for Better Schools, Inc., 1968. 15 pages; unavailable from EDRS due to marginal reproducibility of original document.

The variability among students at the same grade level in the total number of Individually Prescribed Instruction (IPI) units in mathematics and reading mastered during the year 1967-68 is presented in statistical form. Tabulations of the degree of variance show that individualization does occur within the IPI program.

Measurement of Instructional Outcome vs. Measurement for Instruction: A View of IPI Testing Procedures

Anthony J. Nitko. Philadelphia, Pennsylvania: Research for Better Schools, Inc., September 12, 1968. 13 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 185).

In reviewing the Individually Prescribed Instruction (IPI) testing procedures, the author notes that the assessment of student achievement and the planning of individualized instructional sequences involve valid and reliable measurement of many of the relevant characteristics of the learner. He criticizes the placement testing procedure as inadequate, as it does not allow for the employment of a general psychometric model. The unit pretests, which function as diagnostic tests, provide only an outline of the current state of the student's knowledge in a subject, but do not include sufficient assessment of that individual's learning history to make an adequate prescription. The curriculum-embedded tests seem to function adequately. The unit posttests provide information about a student's mastery of individual items, but not about his ability to combine these skills to a more general application. Improvement of the testing system demands careful examination of goals at all levels of analysis and, in particular, demands that all elements under examination be related to the ultimate purposes of the system.

Criterion-Referenced Testing and the Individualization of Instruction

C. M. Lindvall; Anthony J. Nitko. Philadelphia, Pennsylvania: Research for Better Schools, Inc., 1969. 14 pages; paper presented at annual meeting of National Council on Measurement in Education (Los Angeles, California, February 6, 1969). EDRS price microfiche 65c, hardcopy $3.29 (ED 036 167).

Two ways of interpreting raw test data are norm-referencing and criterion-referencing; the former yields information based on some type of ordering of the person on the person's dimension, while the latter tells whether or not students can exhibit a given performance. The criterion-referenced method of handling information is particularly useful in the unit-objective testing of individualizing instruction employed in Individually Prescribed Instruction (IPI) projects.

Individually Prescribed Instruction. A Manual for the IPI Institute

Robert G. Scanlon. Philadelphia, Pennsylvania: Research for Better Schools, Inc., June 1966. 144 pages; manual prepared for IPI Institute, Learning Research & Development Center, University of Pittsburgh, Pittsburgh, Pennsylvania (June 27, 1966-August 5, 1966). EDRS price microfiche 65c, hardcopy $6.58 (ED 036 160).

Offered primarily as a point of departure for educators who intend to apply IPI in American schools, this manual opens with a history of individualization which incorporates a rationale of IPI by Robert Glaser. Section II discusses educational diagnosis, diagnostic instruments and materials; section III is devoted to prescription writing, while the fourth section deals with teaching techniques. The administration of IPI, research related to IPI, and a paper entitled "The Essential Elements of IPI" by C. M. Lindvall form the topics of the last three sections. A reading list for the IPI Institute and a bibliography are included.

Evaluation of Instruction and Changing Educational Models

Robert Glaser. Los Angeles: California University, Center for the Study of Evaluation; Pittsburgh, Pennsylvania: Pittsburgh University, Learning Research and Development Center, September 1968. 28 pages; from the proceedings of the Symposium on Problems in the Evaluation of Instruction (University of California, Los Angeles, December 1967). EDRS price microfiche 65c, hardcopy $3.29 (ED 032 647).

Changing educational practices require changes in our theories and techniques of evaluation. Three forces of change are: (1) the emphasis on cognitive development in the disciplines; (2) the continuity of education over the span of life; and (3) the adaptation of instruction to individual requirements. These influences dictate a form to which evaluative techniques must adapt. The specification of learning outcomes must be well defined in order to evaluate progress toward these goals. For long term projection, a diagnosis of a student's initial state is required. A key task is to determine measures of instructional alternatives to prescribe the most effective sequence of courses. Continuous assessment is necessary to aid in moving to higher and alternative levels. The interaction between individual differences and instructional practices must be known and measured. And finally, the instructional system must be capable of accumulating knowledge from which it can improve its own functioning and come closer to its expressed goals.

Individually Prescribed Instruction. Education U.S.A. Special Report (8th)

George W. Neill; and others. Washington, D.C.: National School Public Relations Association, 1968. 33 pages. EDRS price microfiche 65c, hardcopy not available from EDRS (ED 031 815).

Individually Prescribed Instruction (IPI) is described. The IPI program, which covers the subject areas of mathematics, reading, primary science, and spelling, requires no grades or basic textbooks. The program is based on specific behaviorally stated instructional objectives which are grouped into meaningful sequences representing different levels of progress. IPI allows the teacher to diagnose a child's relative progress on an individual basis and to prescribe appropriate instructional tasks which will enable the child to move on to the next curriculum level. Three to five years of perfecting IPI in demonstration will be required prior to extensive evaluative research.

Developmental Aspects of Individually Prescribed Instruction

John O. Bolvin; Robert Glaser. Pittsburgh, Pennsylvania: Pittsburgh University, Learning Research and Development Center, 1968. 5 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 031 768).

Among the working aims of IPI are the development of self-directed and self-initiated learners through instructional procedures which provide for self-selection and self-evaluation. The developmental requirements to meet the objectives include the following components: (1) detailed diagnosis is made of the initial state with which a learner comes into a particular instructional situation, and (2) the adaptation of educational alternatives to the performance profiles determined in the student population.

VI. SELECTED INSTITUTIONAL APPROACHES

Entries have been categorized according to whether the project is mainly concerned with *elementary education, secondary education,* or *higher education.* Many of the documents are descriptions of operating projects and materials used in them.

Elementary Education

PEP in the Frick Elementary School; Interim Evaluation Report of the Primary Education Project, 1968-1969

Margaret C. Wang, and others. Pittsburgh, Pennsylvania: Pittsburgh University, Learning Research and Development Center, 1970. 48 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 973).

The main objective of the Primary Education Project (PEP) is to develop an individualized early learning program to serve children from age three through the primary grades. This report describes the results of the initial year (1968-69). The PEP early learning curriculum included the following areas: (1) beginning mathematics curriculum; (2) classification curriculum, which included skills in basic color, size, and shape discrimination; and (3) gross and fine motor skills curriculum. The effectiveness of PEP is indicated by the significant gains in I.Q. scores and achievement levels by both the PEP criterion-referenced tests and standardized tests.

Behavior Analysis in Curriculum Design: A Hierarchically Sequenced Introductory Mathematics Curriculum

Lauren B. Resnick, and others. Pittsburgh, Pennsylvania: Pittsburgh University, Learning Research and Development Center, December 1970. 82 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 954).

A method of systematic behavior analysis is applied to the problem of designing a sequence of learning objectives that will provide an optimal match for the child's natural sequence of acquisition of mathematical skills and concepts. A discussion of the ways in which a hierarchically sequenced early learning curriculum can be used in schools is presented. In particular, a "complete mastery model" is described.

Individualized Curriculum and Instruction

K. Allen Neufeld, Ed. Alberta: Alberta University, Edmonton, Department of Elementary Education, June 1970. 220 pages; proceedings of Invitational Conference on Elementary Education (Alberta, October 29-November 1, 1969). EDRS price microfiche 65c, hardcopy $9.87 (ED 046 122).

This collection of conference papers by various authors covers the following aspects of individualized curriculum and instruction: (1) research trends, (2) applicability to specific subject areas, and (3) implications for teacher education.

Model Observation Kindergarten and First Grade, Amherst, Massachusetts: Model Classrooms Which Offer Completely Individualized Scheduling for Mixed Age Groups of Kindergarten and First-Grade Students. Model Programs–Childhood Education

Palo Alto, California: American Institutes for Research, 1970. 19 pages; booklet is one in a series of 34 descriptive booklets on childhood education programs prepared for the White House Conference on Children, December, 1970. EDRS price microfiche 65c, hardcopy not available from EDRS (ED 045 219).

This booklet describes the Model Observation Kindergarten and First Grade whose approach is based on the philosophy that education should be centered in the learner, that children learn at different rates and that children learn something only when they are ready. Many aspects of the British Infant Schools are incorporated in the program. Sources of more detailed information are provided for this program, specifically, and for Model Programs Childhood Education, in general.

And All This is Reading: English Language Arts Primary Reading Handbook

Rockville, Maryland: Montgomery County Board of Education, 1967. 195 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 044 414).

Emphasizing successful reading instruction as a non-repetitive, creative process which provides the child with both challenge and opportunities for success, units in this handbook focus on the child as an individual–his behavior, his maturity, and his capacities for understanding, learning, and creating. Each of the ten units provides teaching techniques and classroom examples concerning the child. Appended are suggestions for teacher preparation, for developing specific reading skills, and for the use of audio-visual materials; recommended independent learning activities; a section on language development in the content fields–science, social studies, math, art, and music; and a brief bibliography.

A System of Individually Guided Motivation. Practical Paper Number 9

Herbert J. Klausmeier, and others. Madison, Wisconsin: Wisconsin University, Research and Development Center for Cognitive Learning, January 1970. 33 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 619).

The purpose of this paper is to describe a system of individually guided motivation which is directly tied to a total system of individually guided education. In the system of motivation, the child's entering characteristics are assessed, motivational objectives in the form of desired behaviors are set for each

child, a program designed to generate and maintain a desired level of motivation for each child is carried out, and finally the child's motivational progress is assessed. The motivational activities are usually directly tied to the instructional program in various curriculum areas and include large group, class size group, small group, and one to one activities.

Reading Programs in Small Schools

Leah Mahaney, and others. Denver, Colorado: Colorado State Department of Education, 1964. 83 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 361).

Reading programs in three small elementary schools are discussed and evaluated by the teachers involved. The first and second programs involved individualized multilevel reading materials and reading labs. The third program involved taped daily reading lessons with earphones for students, thus allowing the teacher to give more individual attention to the students.

Telluride Nongraded Elementary School

Paul Frick. Denver, Colorado: Colorado State Department of Education, 1963. 27 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 358).

Teachers in a small Colorado elementary school noted that their school program needed changes in (1) promotion and retention, (2) acceleration, (3) individualization, and (4) report cards. A gradual conversion was made to a nongraded school program. The nongraded subjects, reading and arithmetic, were set up successfully for individualized instruction. Promotion and retention were eliminated; thus, learners made progress at their own rates of speed and were advanced when they learned the skills and concepts assuring them success at the next level of learning. The document is appended with a comparison of main features of the graded versus nongraded elementary school, with sample report cards, and with materials for evaluating reading and arithmetic skills by achievement levels.

Nongrading Your Elementary School. NASEC Monograph Series, Spectrum

Paul C. Sowers. Flagstaff, Arizona: Northern Arizona Supplementary Education Center, June 1968. 27 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 030 943).

Special features of a nongraded elementary school program are reviewed as a guide to those wishing to implement the concept as a way to provide individualized instruction and quality education for all students. Emphases include the individual differences of students, the restrictive character of graded schools, curriculum patterns, levels of instruction, grouping for instructional purposes, progress reports, school organization, and subject scheduling. Nineteen charts, graphs, and other figures indicate the distinctive features of a nongraded elementary school program. A bibliography of 23 items published between 1960 and 1967 is appended.

The Nongraded Continuous Progress Plan: Report of the Self-Evaluation Study, 1968

A. Sojonky. Regina, Saskatchewan: Saskatchewan Department of Education, 1969. 92 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 029 390).

In 1964 the Saskatchewan Department of Education embarked upon a provincial reorganization for the elementary schools based on the theory of continuous pupil progress. The grade system for the first 6 years of school was to be replaced by two broad divisions: Division I to encompass the work in Grades 1, 2, and 3; and Division II to replace Grades 4, 5, and 6. The extent to which the alleged advantages of the Nongraded Continuous Progress Plan have been achieved is described in the report.

Secondary Education

Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.) Vocational-Technical School. Project ABLE, Final Report

J. William Ullery; Joseph S. Nicastro. Pittsburgh, Pennsylvania: American Institutes for Research; Quincy, Massachusetts: Quincy Public Schools, September 30, 1970. 163 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 048 492).

Project ABLE, a systems approach to occupational education, was conducted (1) to demonstrate increased effectiveness of instruction whose content is derived from analysis of desired behaviors after graduation and (2) to apply newly developed educational technology to the design, conduct, and evaluation of vocational education. Several procedures were established to accomplish project objectives, including methods for defining educational objectives, deriving course content, individualizing instruction, measuring student achievement, and evaluating program results. Despite several problems, especially budgetary limitations, Project ABLE has made major contributions in terms of potential national significance and application in the areas of individualized instruction, student evaluation, and program evaluation. Recommendations and selected references are listed, and several project materials are appended, including brief summaries of the 18 previous technical reports. Related ERIC reports are ED 047 157, ED 045 854, and ED 029 088.

Terminal Performance Objectives for a Phased Shorthand Program in Business Education

San Mateo, California: San Mateo Union High School District, August 1970. 137 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 048 449).

This phased shorthand program is designed to allow each student to move as rapidly toward achieving the goal of vocational competence as his motivation, ability, and time permit. Successful completion of the program is based upon the student's ability to meet the minimum terminal performance objectives. Included in the four phases of this program are suggestions concerning (1) grade placement, (2) prerequisites, (3) rationale, (4) general objectives, (5) instructional content, (6) evaluation, and the related terminal performance objectives.

Terminal Performance Objectives for Selected Programs in Business Education, Distributive Education, Work Experience Education, and Career Guidance

San Mateo, California: San Mateo Union High School District, September 1970. 77 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 048 448).

Staff members specified the minimum terminal performance objectives for courses in (1) Accounting I, II, III, and IV, (2) Office Machines and Office Procedures, (3) Distributive Education Programs, (4) Work Experience Programs, and (5) Career Guidance.

Social Science Elective Packages: An Independent Study Program for Grade 12

David B. Moody. Columbia, Missouri: Missouri University, College of Education, 1970. 14 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 048 032).

During the Winter Semester of 1970 a seminar was conducted for doctoral students in social studies education as a practicum in curriculum development to meet some of the special needs of the small high school, specifically the production of social science independent study packages. The packages produced were one-half Carnegie unit equivalent senior elective packages to be pilot tested in the laboratory school at Missouri University the following year. The packages were conceived of as meeting three needs in education: 1) a need for greater commitment to the concept of continuous progress, to encourage further study in the social sciences; 2) a need for breadth in the small school social studies curriculum through self-contained packages for the student and the teacher; and, 3) a need for the fostering of responsibility in students for their own learning. At the present time six packages have been completed: 1) General Psychology; 2) Introduction to Prehistory (Anthropology); 3) Understanding Our Economy; 4) the American Civil War; 5) the Negro in America; and, 6) American Political Parties. Three more packages are scheduled for completion: 1) American Foreign Policy Since 1945; 2) the History of Science; and, 3) Ethiopia. The ultimate goal is to offer seniors twenty to twenty-five such packages.

An Individualized Module for Specific Performance Objectives in Sets, Non-Metric Geometry and Relations

J. Marvin Cook. Baltimore, Maryland: Maryland University, Division of Education, December 1969. 38 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 940).

This booklet is a sample activity from an individualized instruction unit in mathematics. Agreement between the performance specified in the units' objectives, the performance taught in the instruction activity, and performance required on the posttest was a key criterion during the development of this material. The student is told what he is expected to be able to do at the end of the activity, and how the particular activity relates to the entire instructional unit. The material presented deals with the solution of linear equations and the graphing of linear inequalities.

Individualized Foreign Language Program

West Bend, Wisconsin: Joint School District No. 1. 1970. 137 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 047 574).

A summary of project objectives, procedures, and dissemination is developed in this report of work initiated in June 1968. Programs in French, German, and Spanish for students in junior and senior high schools are evaluated with special reference to attitudes, aptitude, achievement, and program management. A final section reviews procedures and expectations for a third year of operation. Extensive sample instructional materials for French, German, and Spanish are included.

Foreign Language Instruction in New York State for the 1970's: Techniques, Materials, Equipment

Paul M. Glaude. Albany, New York: New York State Education Department; New York State University System, November 17, 1970. 15 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 046 293).

This projection of trends in language instruction in the State of New York features a reoriented audiolingual teaching methodology stressing the significance of programmed self-instruction with modified educational objectives and goals. Prominent in the discussion are concepts relating to: (1) the teacher as manager of instruction, (2) improvement in the techniques used in instruction, (3) "transfer" versus "drill" activities, (4) flexible curriculums and modular scheduling, (5) the student-centered curriculum, and (6) the development of self-instructional programs.

Development of Secondary Reading Programs

Harold V. Graham. May 9, 1970. 13 pages; paper presented at the Conference of the International Reading Association, Anaheim, California, May 6-9, 1970. EDRS price microfiche 65c, hardcopy $3.29 (ED 044 242).

A plan for individualizing instruction in large or small secondary reading classes is presented. The need for adapting reading instruction to individual student differences is discussed with emphasis upon a complete and thorough diagnosis of each student's individual needs. Techniques are outlined for measuring, interpreting, and recording individual differences in intelligence, mode of learning, cognitive style, personality, motivation, interest, cultural and educational background, and reading skills. Materials should be self-administrating, autoinstructional, and multilevel. In addition, the student must have continuous knowledge of his progress, made possible by a system for daily and quarterly record keeping. References are included.

Resource Units and an Individualized Free-Reading Program for English, Grades 8-12

Richmond, Virginia: Virginia State Department of Education, Division of Secondary Education, February 1970. 123 pages. Director of Public Information and Publications, State Board of Education, Richmond, Virginia (75c). Document not available from EDRS.

To improve the basic curriculum in English instruction for low-achieving pupils, this bulletin brings together 26 resource units, a description of an individualized, free-reading program, and bibliographies of printed and audiovisual materials.

Individualized Material for Industrial Education Based on the AVA Booklet "A Guide to Improving Instruction in Industrial Arts"

Detroit, Michigan: Wayne State University. 1,041 pages. EDRS price microfiche 65c, hardcopy $36.19 (ED 040 303).

This is a package of individualized curriculum materials for industrial arts. The 10 major units included are: (1) Industry and Civilization, (2) the Industry, (3) Organization and Management, (4) Research and Development, (5) Planning for Production and Manufacturing, (6) Production and Manufacturing, (7) Distribution, (8) Service, (9) Hand Tools and Simple Machines, and (10) Sophisticated Machines. Each unit, identified by a prefix letter, contains color coded individualized packages of information for student use, teacher use, and teacher reference information which outlines special preparations or materials required for student or teacher packages. Each package within the unit is designed to be flexible for use in Grade 7 through Grade 12 and with slight modification it can be used for lower or higher grades. Several teacher-designed simulation games about industry are included. A related document is available as ED 024 814 (RIE, April 1969).

A Progress Report on an Individualized-Integrated Science Course for Senior High School

Eugene S. Scribner. Elk River, Minnesota: Elk River Independent School District 738, March 1970. 30 pages; paper presented at annual meeting of the National Association for Research in Science Teaching (43rd, Minneapolis, Minnesota, March 5-8, 1970). EDRS price microfiche 65c, hardcopy $3.29 (ED 040 052).

This is a progress report of an individualized three-year science course for use in the senior high school. The course integrates biology, chemistry, and physics with smaller amounts of astronomy, geology, meteorology, oceanography and space exploration. The course specifically presents material in small packages called mini-units. Each mini-unit includes an objective specifying the behavioral change that the student is to achieve and suggested activities, experiments, readings, problems, visual aids and tests to help in the achievement. The report includes a review of the project history, the philosophy and goals, materials, operational modes, evaluation procedures, expenditures and project significance. Subjective evidence is in the process of being collected through a testing program. The appendix contains (1) an abstract of the progress report, (2) a progress report form for mini-units, (3) a progress report form for work not directly related to mini-units, (4) a cumulative record for a student, and (5) a sheet stating the criteria for award of grades.

Middle School Overview

David Fraser, and others. Seattle, Washington: Seattle Public Schools, Southeast Educational Center, June 1969. 60 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 279).

This report, the second of two relating to the activities of the Southeast Education Center, describes the Middle School facilities of the Center. The Center was organized on the "continuous progress concept"—that in which a student will move at his own pace in an individualized program. The program will be implemented in a well-designed way to study the effects of individualized instruction on student:teacher-counselor ratio, teacher-counselor roles and functions, curriculum writing and organization, student grouping, special education and accelerated learner needs, building and facilities planning, and other aspects of school system design and development.

Flexible-Modular Scheduling and Related Instructional Strategies

Atiland A. Valencia. Albuquerque, New Mexico: Southwestern Cooperative Educational Lab., July 1969. 29 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 037 809).

This report provides a simplified description of flexible-modular scheduling and of several types of instructional strategies that can be advantageously applied to high school curricula. Group size, facilities, and teaching roles are considered in this overall picture of flexible-modular scheduling.

Individualizing the Study of U.S. History and Government in the Small High School

Charles Holmes; Norman E. Higgs. Denver, Colorado: Colorado State Department of Education, 1964. 25 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 364).

Two projects of individualized instruction are reported in this document. These projects were carried out in small high schools in Colorado and are reported by the instructors involved. Included in the reports are the rationale, objectives, description of student groups, extensive procedural description, and results and recommendations. The results indicate that individualized instruction was highly effective in extremely heterogeneous groups in the small-school situation.

Individualizing Instruction in Science in the Small School

Deane L. Munger; Marshall T. Steen. Denver, Colorado: Colorado State Department of Education, 1964. 22 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 363).

Experimental programs in the teaching of science, introduced in two small schools in Colorado, are discussed and evaluated by the teachers involved. The first program is a student-directed approach to the teaching of biology, with an emphasis on scientific processes rather than traditional subject matter. The second program of individualized instruction is in advanced science research. A complete discussion of program planning and implementation is presented. In both cases, the instructors felt that their students gained in self-discipline and that this gain would be of much benefit in their future schooling. Also, in both cases, the teachers were planning to continue the new approaches to the teaching of science.

English Instruction in the Small School

Crystal Marietta, and others. Denver, Colorado: Colorado State Department of Education, 1964. 100 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 036 359).

Six attempts by English teachers in Colorado small schools to individualize English, language arts, and poetry instruction are reported. In the experiments, class discussions were teacher-prepared and included objectives, procedures, instructional materials, testing programs, and evaluations. Both junior high school and senior high school students were involved. Materials utilized ranged from commercially prepared materials to teacher-prepared materials. In the document, classroom procedures and student independent study methods are discussed in detail. Evaluation procedures are varied and include student evaluation and opinion, and standardized achievement tests.

Independent School District No. 834, Stillwater Senior High School, Stillwater, Minnesota

Hammel, Green and Abrahamson, Architects, St. Paul, Minnesota, 1968. 13 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 035 254).

Reevaluation of this high school's educational program indicated a need for massive change in its organization patterns; emphasis was to be on the individual student and his adaptability in a changing society. The new pattern of organization includes large and small group discussions, teacher teams, resource centers or learning laboratories, individual learning, and flexible scheduling. A site plan, floor plans, and photographs explain the physical environment of the school.

Independent Study: Academic Freedom, New Style

Washington, D.C.: National Association of Secondary School Principals, May 1967. 12 pages; summary of findings to be published: William M. Alexander; Vynce A. Hines. Independent Study in Secondary Schools. New York: Holt, Rinehart, and Winston. EDRS price microfiche 65c, hardcopy not available from EDRS (ED 033 457).

This research report summarizes a study of independent study projects in 36 American secondary schools selected from a list of 317 schools nominated as having definite and organized independent study programs. The investigators found 8,584 students in the 36 schools involved in independent study programs. Independent study is defined as learning activity that is (1) motivated by the learner's own aims, (2) rewarded in terms of its intrinsic values, (3) somewhat independent of the class, and (4) using the services of teachers primarily as resources for the learner. Most schools offered independent study in from two to seven areas. The field drawing the largest number of students was science, followed by English and social studies. Questionnaire data gathered from 300 teachers showed that those teachers who have had experience with independent study programs favor their expansion.

New Directions in Instructional Practices

Gordon Cawelti. Iowa City, Iowa: Iowa University, Iowa Center for Research in School Administration, January 1968. 13 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 020 570).

Because the last decade has been a period of more intense educational innovation than any previous period in history, a national study was made to determine how secondary schools have changed. A questionnaire was distributed to 10,266 regionally accredited high schools in the United States, and 7,400 responses were received. The results of the study are presented as tables cataloging the major innovations by percentage of schools which adopted the innovations, state, enrollment, expenditure, type of support, and area served. Brief attention is given to the abandonment of innovations, and interpretation of the data is provided. The areas found to be of most importance were (1) attitudes toward learning, (2) staff deployment, (3) focus on the individual, and (4) means of making learning interesting and authentic.

On Their Own, a Handbook of Independent Study

Allan A. Glatthorn, and others. Abington, Pennsylvania: Abington Township School District, 1966. 88 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 011 132).

The responses of 741 ninth-grade students to the Independent Study Program (ISP) were recorded from homeroom discussions and the Independent Study Questionnaire (ISQ). The ISP provided time blocks, special facilities, and minimal rules and regulations for a high school student's day. Basic content

courses (Departmental Centers) and skill improvement areas (Independent Study Centers) were organized with structured and unstructured learning experiences, using teachers, aides, and student leaders. Recommendations included (1) greater use of the ISP for basic course content, (2) more materials and equipment for ISP centers, (3) more space for ISP centers, and (4) the addition of a full-time ISP program coordinator. The appendix included (1) form letters to students and parents explaining the ISP and scheduling procedures, (2) student and teacher ISP guides, (3) teacher reporting forms for ISP and (4) the ISQ.

Higher Education

Personalized Education for Teachers. An Introduction for Teacher Educators

Frances F. Fuller. Austin, Texas: Texas University, Research and Development Center for Teacher Education, July 1970. 68 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 048 105).

This manual is first in the series "Personalized Education for Teachers," a program based on the thesis that truly personalized public education (that which is tailored to fit the personal needs and feelings of students) is possible now. The general purpose of the manual is to present a system of ideas and procedures which make it possible to personalize the education of elementary teachers and, by extension, the education of students of all ages. Included are a list of 33 references; a list of 14 other items in the series (manuals, videotapes, assessment instruments, etc.); and an overview model for the use of these materials in the personalized education program.

Problems of Individualization

Clarence Anderson, February 1970. 7 pages; paper presented at the National Reading Conference, St. Petersburg, Florida, December 3-5, 1970. EDRS price 65c, hardcopy not available from EDRS (ED 047 914).

Individualization, defined as personalized instruction, may be accomplished through helping the student to read course materials, helping him to read special materials, or helping him in terms of reading skill needs. The Genesee Community College, Flint, Michigan, relies on several measures to determine student entry skills, provides personalized programs designed to develop skill weakness areas, and evaluates individual progress as it relates to program and individual goals. References are included.

Project CALCOP. Final Report

Richard W. Brightman. Costa Mesa, California: Coast Community College District, December 1970. 34 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 046 373).

This is the final report of Project CALCOP, a joint project of the Coast Community College District, the Los Angeles Police Department, and the Los Angeles Police Academy to develop, implement, and evaluate Computer-Assisted Instruction (CAI) in the Rules of Evidence and Search-and-Seizure Procedures of police training. The CALCOP learning system is a combination of independent study and CAI exercises. The project compared one group of cadets using the CALCOP learning system and another group with similar characteristics using conventional classroom instruction. Examination results show that the new learning system is more effective as a teaching technique than the traditional classroom.

A-T and the Minicourse Concept

R. N. Hurst, and others. Lafayette, Indiana: Purdue University, Indiana Department of Biological Sciences, 1970. 7 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 396).

Two introductory biology courses which are given as service courses for agriculture students have been broken down into small conceptual units (mini-courses). Students cannot fail the course and are awarded a C grade when they have reached a predetermined level of mastery. If students do not complete the requirements, they are not given a grade or recorded as a fail. To obtain grades of A or B students elect to do extra reading and take a test measuring higher cognitive levels than knowledge. The mini-courses are taught using an audio-tutorial technique.

Model for Designing a System to Individualize Instruction and Guarantee Learning. Final Report

Edmund W. Fitzpatrick. Washington, D.C.: Sterling Institute, August 1970. 329 pages. EDRS price microfiche 65c, hardcopy $13.16 (ED 043 791).

This final report concerns a pioneering, three-year curriculum development project dedicated to translating recent learning theory and laboratory findings into operational practice in an existing educational institution. This project produced a highly successful and unique course that teaches two semesters of economics that students can master in from six weeks to one semester's time. In the course, students negotiate individual learning contracts with instructors, making decisions on what they will study, what media they will use, and now fast they expect to progress. The report explains how the course was developed, including the rationales, methods, and procedures which were empirically tested.

A Proposal to the Carnegie Corporation of New York for Developing an Individualized, Performance-Based, Teacher Education Program

Ogden, Utah: Weber State College, 1969. 24 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 040 139).

This document describes a part of the continuing project intended to become, at the end of the three-year development period in September 1971, the only route to teacher certification available on the Weber State College campus. Under this program the basic mode of instruction is with self-instructional units called "Weber Individualized Learning Kits" or "Wilkits," consisting of moderately structured segments using a variety of experiences including independent reading, audio and video tapes, conferences, etc. Each Wilkit deals with a single significant concept and requires 10-30 hours to complete. The student will progress from study of the principles to practice under controlled conditions and finally to application in the classroom under supervision. Self-evaluation will play an important part in the program.

A Performance Curriculum in Undergraduate Teacher Education

Rogers McAvoy; Alvin R. Carter. 1970. 14 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 039 174).

This document describes the design, operation, and field-testing of an innovative model for undergraduate teacher education at West Virginia University. Emphasizing the need for students to translate cognitive learning into performance objectives, mediation of content, student interaction with instructional material, remedial loops to encourage mastery, feedback systems on student performance, and a more effective motivational system. Central to the operation of the model are: the learning center (an instructional laboratory which houses mediated instructional units based on the content of foundation courses), the controlled teaching laboratory (which brings students to a satisfactory teaching performance level by microteaching techniques), and the auto-tutorial audiovisual laboratory (which provides students with skills for operating six to ten instructional machines and establishes performance criteria which must be met before the student begins instruction in the learning center).

Wisconsin Elementary Teacher Education Project. Volumes I-IV

John M. Kean, Ed. Madison, Wisconsin: Wisconsin University, School of Education, February 1969. 718 pages. EDRS price microfiche 65c, hardcopy $26.32 (ED 036 678).

This four-volume report includes position papers and specifications for the Elementary Teacher Education Program of the University of Wisconsin in the year 1975 and beyond. The essential purposes of the model are (1) to improve instruction and learning through procedures which emphasize individualization; (2) to improve the quantity and quality of meaningful personal contact between faculty and students; and (3) to utilize modern technology in the accomplishment of these ends. A major feature of the project is the Cybernetic Systems Model designed to interrelate specified behavioral objectives with effective methods of achieving them and to enable continuing refinement and development of the program specifications during the process of implementation. (ED 035 610 is a summary of this report.)

Geography Via the Audio-Visual-Tutorial Method

Benjamin F. Richason, Jr. National Council for Geographic Education, 1969. 44 pages. Document not available from EDRS.

Geography teachers have available to them a wide variety of audiovisual aids. But the methods by which these materials should be used to produce the greatest impact upon learning deserve careful consideration. The Audio-Visual-Tutorial (ATV) Laboratory at Carroll College purposes to improve the content of the Freshman-Sophomore course in Physical Geography, stimulate interest, promote independent learning, provide flexibility of class meeting times, make adjustments for the diversity of educational backgrounds, and promote economy in instruction. Fifteen study carrels are equipped with tape transports, slide projectors, and space for displaying models, samples, and instruments as needed. A large demonstration table also exhibits materials and instruments. Eight millimeter continuous-loop, rear projection units, independent study booths, and a weather station are also provided. The course consists of laboratory work and discussion sessions. Approximately 40 percent more content is thus presented and examination scores have improved 28.75 percent.

The University of Missouri Adult Basic Education System

Donald W. Mocker; Clive C. Veri. St. Louis, Missouri: Missouri University, Extension Division, 1969. 98 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 030 048).

The University of Missouri Adult Basic Education System is designed to effect behavioral change in undereducated adults through an individualized flexible approach to learning. The subsystems of diagnostic testing; individual counseling, teaching-learning, achievement testing, and group counseling workshops are structured around the psychological and curricular principles of: individualized learning; meaningful and practical adult curriculum; a variety of instructional media; a threat-free learning environment; immediate feedback; active learning situations; and sensitized teachers, aides, counselors, and researchers. Specific curriculums for reading, language, mathematics, and social studies are presented with suggested published materials.

Individualization of Instruction for Teacher Corpsmen

Evan R. Sorber. Philadelphia, Pennsylvania: Temple University, 1968. 19 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 026 341).

This preparation of the Temple-Philadelphia-Trenton Teacher Corps Program describes the use of the resources which are available to most colleges, universities, school systems, and communities to achieve the goals of technology in education—individualization and humanization. Staff deployment and characteristics (including intensity and diversity of involvement, ability to work as a team, knowledge, ability to communicate, and respect for individuality) are presented. The major portion of the report is a description of training techniques for individualizing learning.

A Competency Based, Field Centered, Systems Approach to Elementary Teacher Education. Volume I: Overview and Specifications. Final Report

H. Del Schalock; James R. Hale, Ed. Portland, Oregon: Northwest Regional Educational Lab., October 1968. 151 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 026 305).

This main volume explains the Comfield (competency based, field centered) Model–a systems approach to the education of elementary school teachers which entails specifications (1) for instruction and (2) for management of the instructional program.

A Model of Teacher Training for the Individualization of Instruction; Educational Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers. Final Report

Horton C. Southworth. Pittsburgh, Pennsylvania: Pittsburgh University, School of Education, October 31, 1968. 210 pages. EDRS price microfiche 65c, hardcopy $9.87 (ED 025 495).

The model of Teacher Training for the Individualization of Instruction, developed at the University of Pittsburgh, is predicated upon five requirements for training teachers: (1) academic education, (2) professional education, (3) competencies, (4) guidance, and (5) clinical setting. Instruction is individualized (tailored to suit the characteristics of individual learners) and implemented through the instructional mode (a basic plan to restructure all teacher-learner experiences to include specifying goals, assessing student achievement, diagnosing learner characteristics, planning programs with students, guiding students, and evaluating student progress). Points of entry into the program differ, depending on an individual's prior training and experience. Guidance permits varied coursework and varied rate of completion of the necessary 32 learning units. In the clinical setting, guidance procedures call for extending individualization beyond the learning of concepts and skills into the development of competencies in self-direction, inquiry, and personal-social characteristics.

VII. SPECIAL EDUCATION, LEARNING DISABILITIES AND REMEDIATION

Diagnostic and prescriptive individualization techniques for handicapped and non-performing students are suggested by the entries in this listing.

The Not-So-Specific Learning Disability Population: I. An Interactional View of the Causes of Learning Problems. II. Identification and Correction Through Sequential and Hierarchical Teaching Strategies

Howard S. Adelman. Los Angeles, California: California University, 1970. 14 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 047 886).

An interactional view of the factors of school success or failure is presented which encompasses the student's strengths, weaknesses, and limitations on the one hand and specific classroom situational factors on the other. The child's success in the classroom is seen as dependent upon the congruity of his characteristics and the characteristics of the classroom in which he is required to perform. A set of sequential and hierarchical teaching strategies is outlined involving a two-step process by which teachers can identify and attempt to meet the remedial needs of their children.

The Technology of Teaching Young Handicapped Children

Sidney W. Bijou. Champaign, Illinois: Illinois University, January 1971. 30 pages; paper presented at the First Symposium on Behavior Modification (Xalapa, Mexico, January, 1971). EDRS price microfiche 65c, hardcopy $3.29 (ED 046 185).

To fabricate a technology for teaching young school children with serious behavior problems, classroom materials, curriculum format, and teaching procedures were developed, and problems that evolve from the technology investigated. Two classrooms were architecturally designed to provide the basic needs of a special classroom and to facilitate observation of the children and data collection. The basis of the technology was individualized instruction. Research studies derived from the experiment were cited and implications of a technology of special teaching explored.

A Method for Creating and Continuing Individualized Instruction

Anne L. Langstaff; Cara B. Volkmor. March 1969. 14 pages; paper presented at the Conference of the Association for Children with Learning Disabilities, Fort Worth, Texas, March 6-8, 1969. EDRS price microfiche 65c, hardcopy $3.29 (ED 045 320).

Children who have specific learning problems in spite of intact intelligence and sense organs require a type of instruction that is adapted to their particular learning assets and liabilities. The "Systems Model" that is described consists of two input-output cycles which involve the teacher and the school psychologist. Materials which are most likely to bring about a desired response are selected. Revision and modification of procedures, objectives, and materials are outcomes of continuous evaluation of behavior change as it occurs. References are included.

Symposium on Research and Utilization of Educational Media for Teaching the Deaf: Individualizing Instruction for the Deaf Student

Lincoln, Nebraska: Midwest Regional Media Center for the Deaf; Nebraska University, Teachers College, 1969. 245 pages; proceedings of a national conference (Lincoln, Nebraska, March 17-19, 1969). EDRS price microfiche 65c, hardcopy $9.87 (ED 043 987).

Presented are the proceedings of a conference dealing with individualizing instruction for the deaf through greater use of educational media to permit the deaf student to progress at a maximum learning rate.

Application of the IPI Model to a Perceptual Development Curriculum

Jerome Rosner. Pittsburgh, Pennsylvania: Pittsburgh University, Learning Research and Development Center, 1969. 17 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 042 292).

The Individually Prescribed Instruction (IPI) model developed by Bolvin and Glaser (1968) is applied to a perceptual development curriculum for children manifesting learning disabilities. The model utilizes criterion referenced tests for behavioral objectives in four areas: general motor, visual motor, auditory motor, and integrative. Eight units for general motor skills are appended in chart form.

Project Evaluation: The Educational Diagnostic and Planning Center

Theodore L. B. Gloeckler, and others. Cheyenne, Wyoming: Educational Diagnostic and Planning Center; Fort Collins, Colorado: Rocky Mountain Behavioral Science Institute, Inc., 1968. 158 pages. EDRS price microfiche 65c, hardcopy $6.58 (ED 037 868).

Project goals of the Educational Diagnostic and Planning Center were to diagnose academic and behavioral difficulties in their early stages; to design, implement, and improve individualized programs for students with such difficulties; and to establish small halfway classes as a means of gradual reentry to the regular classroom.

Instructional Systems for Students with Learning Disabilities; Junior High School Program

William R. Page. St. Ann, Missouri: Central Midwestern Regional Educational Lab., September 1968. 11 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 035 138).

To establish a remedial and developmental program for seventh and eighth graders with indications of learning disabilities, groups of children, one year or more below grade level in reading and arithmetic skills and recommended by teachers, were enrolled in a special pilot program. Within the six-hour day were physical education, music, art, industrial arts, homemaking, English, math, social studies, and science in unstructured blocks of time. The techniques employed were children helping each other, making their own worksheets and tests, charting their own progress, tutoring those in lower grades, doing independent projects, and using and devising their own diagnostic tests. The results indicated that the children developed better attitudes and enjoyed school more, improved in social skills, learned to progress by their own efforts, worked harder, and gained more than a full school year's progress. The teachers were able to individualize instruction to a large extent which proved very beneficial.

Treating Reading Disabilities: The Specialist's Role

Carl B. Smith, and others. Bloomington, Indiana: Indiana University, 1969. 81 pages. EDRS price microfiche 65c, hardcopy $3.29 (ED 032 698).

One of four books directed to reading specialists, the text provides information on methods for identifying problems that can be efficiently treated in a remedial reading group and on methods for handling these problems. Consideration is given to the scope of the problem and to three categories of disabilities. Appendixes include diagnostic and correctional procedures for specific reading skills and methods for individualizing instruction.

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